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TOPONYMIC DATA FILES: AUTOMATIC DATA PROCESSING (ADP) SYSTEMS; COMPATIBILITY AND STRUCTURE OF SYSTEMS

A long-term vision and development plan for a Canadian digital toponymic service

Paper submitted by Canada**

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In October 1990, the Working Group on Automated Geographical Names Records established by the Canadian Permanent Committee on Geographical Names (CPCGN) recommended that a long-term vision and development plan be formulated for an appropriate Canadian digital toponymic service.

Later that year a contract for such a vision and plan was awarded to Idon Corporation of Ottawa. Their proposals had to reflect the mandates of provincial, territorial and federal names authorities represented on the CPCGN and permit the broadest possible dissemination and use of geographical names information.

The task was not an easy one, as a complex web of conditions was involved. For example, the contractors had to take into account:

- the nature of existing federal, provincial, and territorial analogue and digital toponymic data bases;
- the current and probable future abilities of individual offices of CPCGN members to contribute to a nation-wide system;
- the cultural differences and needs across Canada as they affect toponymic information gathering and data dissemination;
- the different toponymic decision-making processes in place and foreseen in the various provincial, territorial and federal jurisdictions; and
- the trends in information system management and technology development.

Such a toponymic service should put emphasis on accuracy and currency of data, and timeliness of data availability and dissemination. The report, therefore, had to address:

- content, updating, and responsibility for data fields;
- accuracy and/or precision of data required by users;
- modes of disseminating toponymic records;
- access by CPCGN members' offices, various levels of government, academia, and the general public; and
- links to associated non-toponymic data bases (e.g. population, elevations)

Other questions referred to linking existing hardware; possible networking; and maintenance of graphic, or other representations, of toponymic applications on National Topographic Series maps, primarily at a scale of 1:50 000.

Idon established a number of assumptions. Changes have taken place in the decision-making process, so that approving or changing names has devolved from the federal government to provincial and territorial authorities. At the same time paper-based records have and are changing to paper- and/or computer-based records. Idon worked on the premise that CPCGN members would retain the goodwill to work together, and continue to operate with mutual respect and support. The CPCGN has developed a strategic plan and, among its goals, the Committee addresses automated data bases and resulting toponymic products and services.

In preparing their report, Idon Corporation personnel consulted with all CPCGN members; Energy, Mines and Resources staff; a small selection of users with different needs (e.g. mapping agencies, libraries, academic users); and other national names authorities.

Idon completed its final report in March 1991. Various strategic issues were addressed - standards, CD-ROM versus telecom, a planetary data network, raw data versus products, and various administrative mechanisms. Idon also provided information on a number of technical issues, such as options for recording extents of named features, character sets and telecommunication networks. Above all Idon personnel created a vision and made recommendations which could form the foundations of a development plan.

The contractors presented their conclusions to members of the CPCGN Working Group on Automated Geographical Names Records in June 1991. After discussion, participants made appropriate modifications to the recommendations in the report, for presentation to and adoption by the CPCGN.

The Vision and basic aspects of the recommendations, as accepted by the CPCGN at its annual meeting in September 1991, are summarized below.

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* This text is prepared from the terms of the contract awarded to Idon Corporation, the report filed by the contractor, and minutes of the 1991 meeting of the CPCGN Working Group on Automated Geographical Names Records.

(1) THE VISION

The Vision for a Canadian Digital Toponymic Service is that:

> *Users retrieve toponymic data by highlighting the appropriate menu items on their computer screens. They can save what they want.*
>
> *The software is intuitive, retrieval time is fast, and the system is indifferent to the type of computer being used.*
>
> *Some users access locally-stored data, others access data from more distant sites, most using some kind of transparent network.*
>
> *CPCGN members who need to change items in the data base or add items to the data base use their passwords.*

- This is subject to the political and economic constraints of each jurisdiction represented on the CPCGN.
- Implementation will start by focussing on products of national interest and involve working together, with each contributor having a stake in the results.
- The CPCGN will ensure that inquiries of Canada-wide scope continue to be accommodated.
- In moving ahead, members will respect the policies and priorities, and the political and jurisdictional concerns of other members.

(2) RECOMMENDATIONS ON POLICIES, PRODUCTS, SOFTWARE AND TECHNICAL ISSUES

A) Policies

All are subject to the policies of the various jurisdictions and are aimed at promoting harmonious relations among CPCGN members, while realizing the vision.

1. Policy on toponymic data bases

Develop a policy on toponymic data bases following these guidelines:

a) the unimpeded flow of information, data and products in analogue form, among members and with the Secretariat will continue, supported by a no-charge policy; and

b) the toponymic data base of each government is the master data base for that government; it is unique and is owned, operated, and controlled by that government (except where legislated or negotiated otherwise).

2. Policy on selling products

Develop a policy for charging profit-oriented companies for electronic products from CPCGN members based on the following:

a) that each jurisdiction has the right to sell its products for whatever it decides, with the exception that neither EMR nor the CPCGN Secretariat will sell its products at a price less than the provinces or territories are selling their comparable products; and

b) CPCGN members agree to provide the Secretariat with product and service price lists (and regular updates) which will be distributed to all members.

3. Policy on products for not-for-profit organizations

Develop a policy for the provision of electronic products[1] from CPCGN members to not-for-profit organizations (for instance, to other government departments, crown corporations, universities, and research institutes, etc.) based on the following principles:

a) the not-for-profit agency can use such products in house for its staff (and students);

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1 Electronic products include the entire data base and parts thereof, plus any service which is telecom-based.

b) the not-for-profit agency which wants to permit "outsiders" access to such products must first reach an agreement on conditions with the CPCGN Secretariat and/or the appropriate CPCGN member(s);

c) the not-for-profit agency and/or its employees which want to sell or lease their products which are based in the main on the products received from the members of CPCGN must first reach an agreement on conditions with the CPCGN Secretariat and/or the appropriate CPCGN member(s).

B) Products

The products mentioned below are a starting point and are aimed at increasing the dissemination of toponymic information to existing and potential users.

4. Publishing twelve print gazetteers

Provincial, territorial, or federal jurisdictions continue producing a print version of a gazetteer of each province and territory to at least minimum standards accepted by the CPCGN.

5. Publishing one print gazetteer

Work should continue on a concise print version of the gazetteer of Canada in one volume, to include verified factual alpha-numeric information for selected names.

6. Electronic products

Investigate the development of various electronic products (taking into account data ownership, copyright, avoidance of duplication, etc.) and including:

a) Twelve magnetic gazetteers

a magnetic version (in appropriate formats, 5.25" disk, 3.5" disk, etc.) of the gazetteer of each province and territory which might include:

1) verified factual alpha-numeric information of appropriate names in that jurisdiction; and

2) user-friendly retrieval software (with a common interface across all products);

b) One CD-ROM "gazetteer plus"

a "gazetteer plus" of Canada on a CD-ROM which might include for example:

1) verified factual alpha-numeric information of appropriate names;

2) user-friendly retrieval software;

3a) where applicable (first choice) a digital version of appropriate maps to handle issues related to the extent of application of named features;

3b) or where applicable (second choice) fields to permit the recording of a variable number of bounding polygon coordinates and virtual segment end points to be used to define the extent of a name in an alpha-numeric format; and

4) where possible, origin information.

C) Software and technical issues

The following recommendations on software and technical issues concern the Canadian Geographical Names Data Base and the data bases of CPCGN members.

Recommendations 7 and 8 aim at promoting improved access and input to the CGNDB and improved data interchange. Recommendation 8 may not be looked at for quite some time, but its use is anticipated. Recommendation 9 suggests several ways in which CPCGN members might improve not only their data, but also their data bases, so that more useful information can be provided to users.

7. Software

EMR will undertake to have ongoing discussions with other authorities to move ahead, as appropriate.

a) Improving existing software

Enhance the existing *Canadian Geographical Names Data Base* so that the inputting of new records, the changing of existing records, and the searching of the data base can be done in a less cumbersome fashion, in both a stand-alone and telecom

mode, and make such software available to all members;

b) Creating new software

Produce and make available to all members new, user-friendly retrieval software which permits stand-alone and telecom access to both the *Canadian Geographical Names Data Base*, and to the provincial and territorial data bases which use this software; and

c) Establishing an interchange format

Select and make available a format which permits, with the highest degree of efficiency, toponymic data:

1) to be exported from the *Canadian Geographical Names Data Base* to other members' data bases;

2) to be exported from the *Canadian Geographical Names Data Base* to non-members; and

3) to be exported from other members' data bases to the *Canadian Geographical Names Data Base*.

8. *Developing telecom access*

Develop an overall approach which facilitates a standardized method of telecom access to members' data bases for members who desire to permit such access.

9. *Technical issues*

The various sections of this recommendation will require further discussion on implementation and on appropriate priorities.

a) Improving precision of location

Develop a cooperative plan to obtain additional "precision of location" information (seconds of arc or better, or whatever is appropriate to the scale of map on which the decision is recorded) for geographical names in and being submitted to each decision-making jurisdiction's data base (paper or electronic) and to the *Canadian Geographical Names Data Base*;

b) Defining "Geographical name"

Define the meaning of the term "geographical name" in the context of names [i.e., named features] to be included in the various data bases, so that all members can agree:

1) on the minimum suite of names [i.e., types of named features] acceptable for inclusion in each data base;

2) on the minimum core fields acceptable;

3) on the additional optional fields [*identified by each jurisdiction*]; and

4) on the acceptable mechanisms to obtain such information when it is needed and not available through a CPCGN member;

c) Adding header fields

Create an overall header for the data base and for any products produced from the data base that provides the appropriate disclaimers, statements about reliability and identified responsibility for the data itself;

d) Adding extent of feature fields

In order to handle extent of feature within an alpha-numeric data base, add to each record, fields to permit the recording of a variable number of bounding polygon coordinates and virtual segment end points to be used to define the extent of a name;

e) Adding NTS sheet number fields

In order to provide more information about features which cross several National Topographic System (NTS) sheets, add to each record, a field which permits the recording of the NTS sheet numbers for features which are on more than one NTS sheet;

f) Adding character type identifier fields

In order to handle multiple languages with different character sets, add to each record, a field called a character type identifier, which permits the recording of an

indication of the character repertoire to be used in the representation of the name in that record; and

g) Adding "age and change" fields

In order to improve the accuracy of some information in some records, add to each record, fields which permit the recording of information about when the data was collected and when it was last updated.

(3) MECHANISM

The Working Group proposed that the CPCGN disband the Working Group on Automated Geographical Name Records and that, to promote continuity, an Advisory Committee be established as follows:

Advisory Committee on Canadian Digital Toponymic Services (ACCDTS)

To advise and to provide leadership in the development, implementation, and monitoring of objectives to assist the CPCGN in realizing the vision for Canadian digital toponymic services.

Based on the Recommendations, the work of the Advisory Committee will include:

- the investigation of concerns of CPCGN members and issues associated with the development of electronic products, and the accessibility, exchange, and sales of toponymic data; and

- the investigation of standards for data storage and exchange appropriate for CPCGN use.

Idon Corporation's report **Toward the Future: a long-term vision and development plan for a Canadian Digital Toponymic Service** contains much valuable material and will constitute a basic and valuable reference tool for ACCDTS use.

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In early 1992 the advisory committee was established and held its initial meeting. One of the first tasks of ACCDTS was to review a contractor's report on methods of including on toponymic data bases "hard-to-construct" character sets used in Athapaskan geographical names and in various syllabic scripts. The advisory committee is promoting the dissemination of digital toponymic data and, in recommendations to the CPCGN, addresses the need for appropriate agreements to be in place for distribution of data to end-users and to licensees.